

ARB's Commercial Vehicle Enforcement Programs

Presented at:

California Highway Patrol

Commercial Vehicle Safety Summit
June 13-15, 2007

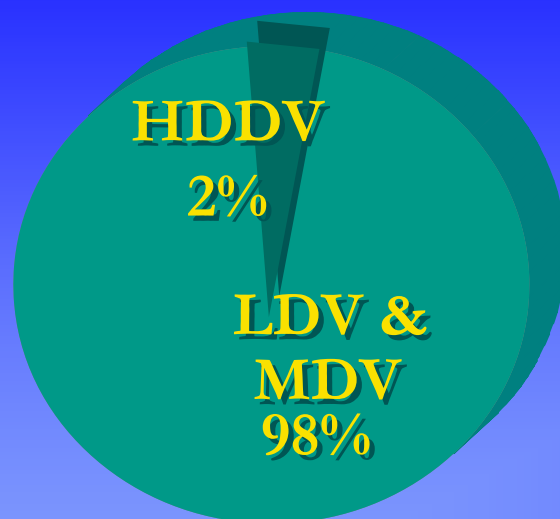
Paul E. Jacobs, Chief
Mobile Source Enforcement



Presentation Overview

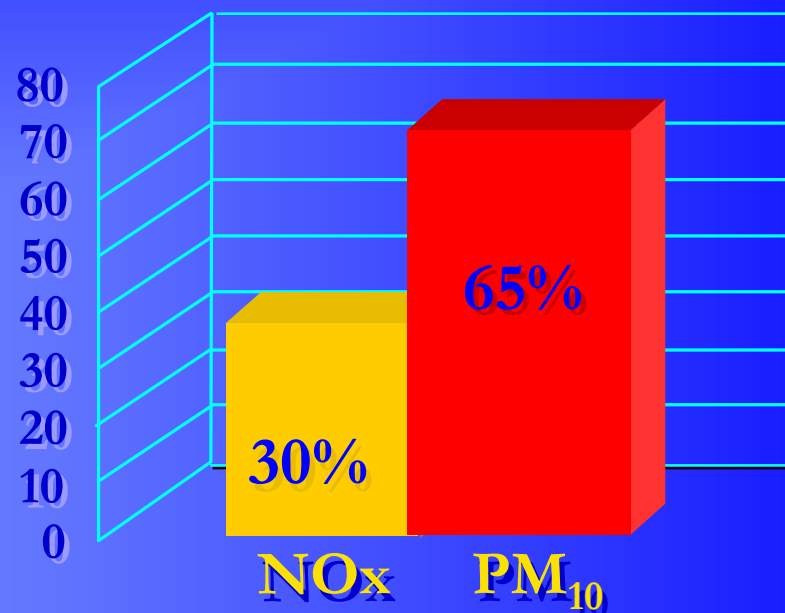
- **Air Quality Overview and Health Impacts**
- **ARB's Heavy-Duty Vehicle Inspection Programs (Roadside Inspections, Fleet Inspections)**
- **Compliance Training and Other Inspection Programs (HDDE Re-Flash, Waste Haulers, Fuels, Idling, TRUs, etc.)**
- **NAFTA and Mexican Truck Emissions (AB 1009)**
- **Environmental Justice Inspections**
- **Upcoming Regulations**
- **How To Comply**

The Problem



% of Total
On-Road Vehicles

% of On-Road Vehicle Emission Inventory







Clear Day Los Angeles



Smoggy Day Los Angeles



Most Polluted Regions In the United States*

Ozone (SMOG)

1. Los Angeles Region
 2. Bakersfield
 3. Visalia/Tulare Co.
 4. Fresno/Madera
 5. Houston
 6. Merced
 7. Dallas/Fort Worth
 8. Sacramento
 9. Baton Rouge
 10. New York Metro Region
- (Hanford, El Centro, Modesto also in top 25)

Particulates

1. Los Angeles Region
 2. Pittsburg, PA
 3. Fresno Region
 4. Bakersfield/Kern Co.
 5. Logan, UT
 6. Birmingham, AL
 7. Salt Lake City
 8. Detroit
 9. Eugene, OR
 10. Cleveland
- (Sacramento, San Francisco/Bay Area, San Diego Region, Hanford/Visalia also in top 25)

Health and Environmental Impacts of Pollutants

Constituent

Detrimental Effect

Particulates (PM₁₀/PM_{2.5})

Carcinogenic/Mutagenic
Respiratory Diseases

HC & NOx (Smog Precursors)

Ozone (Smog)
Respiratory Diseases
Crop Losses

NOx & SOx

Acid Deposition
Visibility Degradation

Toxic Air Contaminants

Carcinogenic/Mutagenic

CO₂, CH₄, CFCs, etc.

Greenhouse Gases/Climate
Change

Strategies to Reduce Diesel Engine Emissions

- **Diesel Risk Reduction Plan**
(75% by 2010 and 85% by 2020)
- **Stringent Engine Certification Standards**
(2007-2010)
- **Stringent Fuel Standards (15 ppm sulfur diesel 2006)**
- **In – Use Programs**
(Enforcement, Retrofits, Incentives)

Smoking or Idling Vehicle Complaints

1-800-END-SMOG
www.arb.ca.gov



Types of Smoke

Black smoke
is caused by
incomplete combustion
(wasted fuel)



Blue smoke is caused
by unburned engine oil
mixed in the exhaust



White smoke is caused
by drops of unburned
liquid fuel and
water vapor



Source: ATA, EMA "On the Road to Clean Air"

Heavy Duty Vehicle Inspection Program - Looking for Excessive Smoke and Tampering

- Updated regulations adopted by ARB in December 1997
- Opacity cutpoints retained
 - 1991+ engines: 40%
 - pre-1991 engines: 55%
- Use of SAE J1667 test protocol
- Looking for tampered engines & emission control equipment (gasoline & diesel engines)
- Administrative appeals through Administrative Law Judge (ALJ) hearing process



Smoke Opacity Standards

- ***1991 and newer engines: 40% opacity***
- ***Pre-1991 engines: 55% opacity***

SAE J1667 Snap-Acceleration Test



Penalty Schedule

Violation	Correction	Penalty
Notice of Violation	Repaired within 45 days	\$0
First citation	Repaired within 45 days	\$300
First citation	Not repaired within 45 days	\$800 (\$300 + \$500)
More than one citation in a year*	Repaired within 45 days	\$1,800 (\$300 + \$1,500)

*CHP can impound vehicles with delinquent citations under CVC 27159

Use of Penalty Funds

- **Diesel Emissions Reduction Fund**
 - \$300 portion of citation
 - Funds research for clean diesel technology
 - Provided ~\$4 million, to date, towards research and development
 - Current program to support Advanced Technology Program and Carl Moyer Program low-NOx technology incentives
- **Vehicle Inspection and Repair Fund**
 - Funds from the portion of a citation that is greater than \$300
 - Funds support Smog Check Program

***CHP may remove, tow, and store
vehicles per
Vehicle Code Section 27159.***

HDVIP Statistics

	HDVIP I (1991 - 1993)	HDVIP II (June 1998 – Dec 2006)
Number of Inspections	38,947	151,586
Number of Citations	8,492	7,606
Number of NOV's	<u>N/A</u>	<u>2,285</u>
Total Violations	8,492	9,891
Failure Rate	22%	6.5%
Number Appealed	1,157 (14%)	172 (1.2%)
Penalties Assessed	\$2,613,300	\$ 2,480,700
Penalties Collected	\$2,061,500	\$ 1,926,619

Initial Roadside Inspections - Litigation

- **Valley Spreader et al. v. ARB**
Imperial County Superior Court
1993 decision for ARB
Upheld the program and test procedures
- **Harris Transportation et al. v. ARB**
Sacramento County Superior Court
1994 decision for ARB
Upheld the program and test procedures
Upheld by 3rd District Court of Appeals (Sacramento);
California Supreme Court denied review

- **Aura Hardwood et al. v. ARB**
Sacramento County Superior Court
1994 decision for ARB
Upheld the program and test procedures
Upheld by 3rd District Court of Appeals (Sacramento);
California Supreme Court denied review
- **Viviano et al. v. ARB**
Sacramento County Superior Court
1997 decision for ARB
Upheld the program and test procedures Upheld by 3rd District Court of Appeals (Sacramento);
California Supreme Court denied review

Diesel Fleet Inspections **(Periodic Smoke Inspection Program)**



- **Same cut points as roadside program**
 - Uses SAE J1667 test protocol
 - Four-year rolling exemption
- **Must test trucks & buses every year and keep the records for two years or in violation (fleets of two or more)**
- **ARB enforcement audits and cases (~40 cases and \$1.5M+ in penalties to date)**

HDVIP Statewide Benefits

(tons per day)

	ROG	NO _x	PM ₁₀
1999	6.4	12.2	5.2
2010	5.3	14.0	3.2

(EMFAC 7g)

Industry Compliance Training

California Council On Diesel Education and Technology



- **Partnership: Community colleges, government, industry**
- **Low-cost training of smoke-test protocol and smoke-related engine repairs**
- **ARB audits classes for QA/QC**
- **Participating Schools:**
 - College of Alameda (Oakland area)
 - San Joaquin Delta College (Stockton)
 - L.A. Trade Tech College (Los Angeles)
 - Palomar College (San Diego County)
 - Santa Ana College (Orange County)

Heavy Duty Diesel Engine Low NOx Software Reflash

- Regulation = ~34 TPD NOx reduced or 25% per HDDE reflashed
- Program enforcement started December 2005
- 1993 – 1998 model year engines must be reflashed by dealers (no cost to owner) or subject to citation
- 1237 citations issued at \$300-\$800 ea -- fleet violations also found
- Program litigation – August 2006 - October 2006 Decision
- 70% of HDDEs captured = ~22 TPD NOx reduced

Solid Waste Collection Vehicle Regulations

- Applies to owners of solid waste collection vehicles over 14,000 lbs. GVW with MY engines 1960 - 2006
- Vehicles must meet BACT by 2007 - 2010 through retrofits or repower and have labels installed NOW!
- BACT is an ARB-verified technology that best reduces PM emissions from the diesel engine
- Expected reduction in toxic PM emissions of 81% by 2010 and 85% by 2015 from 2000 levels
- Program enforcement started in 2005
- 2206 inspections to date...305 violations (\$72.3K assessed with \$43.4K collected)
- Fleet violations also uncovered – many cases pending

Railroad MOU

- June 2005 -- ARB entered into an agreement with Union Pacific Railroad (UP) and Burlington Northern Santa Fe Railway (BNSF)
- Feasible and cost effective measures to reduce locomotive emissions: idling, smoke, low sulfur diesel
- Includes ongoing public involvement at each rail yard – community and Environmental Justice (EJ) concerns addressed
- Enforcement 2006: 1320 inspections/33 NOVs (2.5%)

Dyed Diesel Inspections

- Dyed diesel (RED) is a tax-free fuel intended for use in public fleets and non-road (agriculture and construction) vehicles
- ARB performs inspections for Board of Equalization/Internal Revenue Service
 - Concurrent with roadside inspections
 - Approximately 25,000 inspections per year



Commercial Vehicle Idling Regulations

- Regulation effective February 1, 2005
- Applicable to commercial diesel-fueled vehicles with gross vehicular weight rating (GVWR) greater than 10,000 lbs
- \$100 fine for 1st violation then increases (97 NOV's to date/2130 inspections)
- Limits the idling to no longer than 5 minutes under most circumstances—cannot idle within 100 feet of residence or school
- Limits diesel-fueled auxiliary power system (APS) to no longer than 5 minutes to a power heater, air conditioning, or any ancillary equipment unless sleeper cab in use and 100 feet from residence or school
- Public may report violations to ARB @ www.arb.ca.gov/enf/enf.htm or 1-800-END SMOG

School Bus Idling Regulations

- Regulation adopted in December 2002 as an ATCM
- Prohibits heavy duty (10K+ GVW) school buses and delivery vehicles from idling at or within 100 feet of schools
- Enforced by ARB/APCDs/CHP/Local Law Enforcement (3180 inspections/5 NOVs to date)
- \$100 fine for 1st violation then increases
- Public may report violations to ARB @ www.arb.ca.gov/enf/enf.htm or 1-800-END SMOG

Transportation Refrigeration Units (TRUs) Regulations

- **Approved by the Air Resources Board in February 2004**
- **Designed to use phased approach over ~15 years to reduce diesel PM emissions from in-use TRU and TRU generator set engines**
- **PM emissions from TRU and TRU generator set engines estimated to be reduced by 65% in 2010 and 92% by 2020**
- **Enforcement started in 2006 -- facility reporting -- violations found -- cases pending**
- **Full enforcement in 2009**



NAFTA Overview



- Started in 1990 by President George H.W. Bush and Mexican President Carlos Salinas
- Adopted by Congress in 1993 and signed by President William J. Clinton
- Became effective January 1, 1994
- Litigated – June 2004 US Supreme Court Decision

NAFTA Impacts

- Mexican trucks will be allowed to travel freely throughout North America (currently restricted to border commercial zone)
- Currently ~3500 Mexican trucks cross into California every day
- Expected to increase significantly when NAFTA is triggered

NAFTA Impacts Continued



- Mexican fleet is older than U.S. Fleet
- ~66% of the Mexican fleet pre 1993 model year HDDEs
- ~25% of the Mexican fleet pre 1980 model year HDDEs

California NAFTA Legislation



- AB 1009 of 2004 (Pavley Bill)
- Urgency legislation signed into law on September 29, 2004 by Governor Schwarzenegger
- This bill amends Health and Safety Code Section 43701

AB 1009 Requirements

- ARB, in consultation with the CHP, adopted regulations January 1, 2006
- Regulations prohibit HDDVs with non-USEPA certified engines from operating in California
- All HDDEs must have a factory engine certification label - NTC issued – no violation if fixed within 45 days, \$500 if not
- ARB and CHP enforcing regulations starting Feb. 15, 2007

Emission Standards

- Mexican diesel engine emission standards were aligned with U.S. EPA standards for the 1994 - 2003 MYs
- Mexico has not revised its emission standards to reflect recent U.S. standards
- U.S. standards require 50% reduction in NO_x for 2004 - 2007 engines
- U.S. requires a 90% reduction in NO_x and PM for 2007 and subsequent MY engines

U.S. vs. Mexican Heavy-Duty Emission Standards

Comparison of U.S. and Mexico Heavy-Duty Diesel Vehicle Emission Standards
(in grams per brake horsepower-hour)

	Hydrocarbons (HC)		Carbon Monoxide (CO)		Nitrogen Oxides (NOx)		Particulate Matter (PM)	
	U.S.	Mexico	U.S.	Mexico	U.S.	Mexico	U.S.	Mexico
1974-78*	-	-	40.0	-	-	-	-	-
1979-83**	1.5	-	25.0	-	-	-	-	-
1984-87	1.3	-	15.5	-	10.7	-	-	-
1988-89	1.3	-	15.5	-	10.7	-	0.6	-
1990	1.3	-	15.5	-	6.0	-	0.6	-
1991-93	1.3	-	15.5	-	5.0	-	0.25	-
1994-97	1.3	1.3	15.5	15.5	5.0	5.0	0.1	0.1
1998-2003	1.3	1.3	15.5	15.5	4.0	4.0	0.1	0.1
2004-2006***	0.5	1.3	15.5	15.5	2.0	4.0	0.1	0.1
2007	0.14	1.3	15.5	15.5	0.2	4.0	0.01	0.1

*U.S. had combined HC+NOx standard of 16 g/bhp-hr

**U.S. had combined HC+NOx standard of 10 g/bhp-hr

***Under a consent decree with U.S. EPA, engine makers implemented the 2004 standards in October 2002. Standards allow the option of 2.4 g/bhp-hr NMHC+Nox, or 2.5 g/bhp-hr NMHC+Nox and 0.5 NMHC. Assumes no future change in Mexican emission standards.

Truck Emission Factors US/Canada v. Mexican

Truck Emission Factors US/Canada v. Mexican (grams per mile)*

Year	NOx g/mile	Delta	PM g/mile	Delta	Mode**
1999 US/C	12.8	-----	0.75	-----	Highway
1999 MX	19.3	+6.5 (51%)	1.13	+.38 (51%)	Highway
2010 US/C	1.38	-----	0.051	-----	Highway
2010 MX	4.73	+3.35 (243%)	0.262	+.211 (414%)	Highway

These are fleet average emission rates and the 2010 year figures reflect the 2007 USEPA emissions standards discussed above. Canadian engine emissions standards are aligned with the USEPA engine emission standards.

* North American Trade and Transportation Corridors: Environmental Impacts and Mitigation Strategies, Final Report – Prepared for the North American Commission for Environmental Cooperation by ICF Consulting, August 2001. www.cec.org

**Idling emission factors available on request

Otay Mesa Border Crossing Area



Map of Border Crossings



California AQ Impacts

Various studies have modeled the AQ impacts of the increased Mexican travel into California under NAFTA and the worst case scenario is 50 additional tons per day of NOx and 2.5 tons per day of PM in the South Coast Basin alone*

***Refer to Sierra Research Report No. SR02-04-01: Critical Review of "Safety Oversight for Mexico Domiciled Commercial Motor Carriers, Final Programmatic Environmental Assessment," Prepared by John A. Volpe Transportation Systems Center, January 2002**

Enforcement at the Mexican Border & NAFTA

- **Legislation (SB 270, Peace) in 1998 authorized:**
 - Full time enforcement at Otay Mesa and Calexico Border Crossings
- ~3,500 commercial vehicles cross into California at these crossings each day
- NAFTA Issues & Litigation (U.S. Supreme Court decision 6/7/04)
- 2,070 inspections/300 violations (14.5% failure rate) in 2006

Inspections/Violations

CHP CVIFs: 13,694/1,088*

Failure Rate: ~8%

Random Roadsides: 5,141/742*

Failure Rate: ~14%

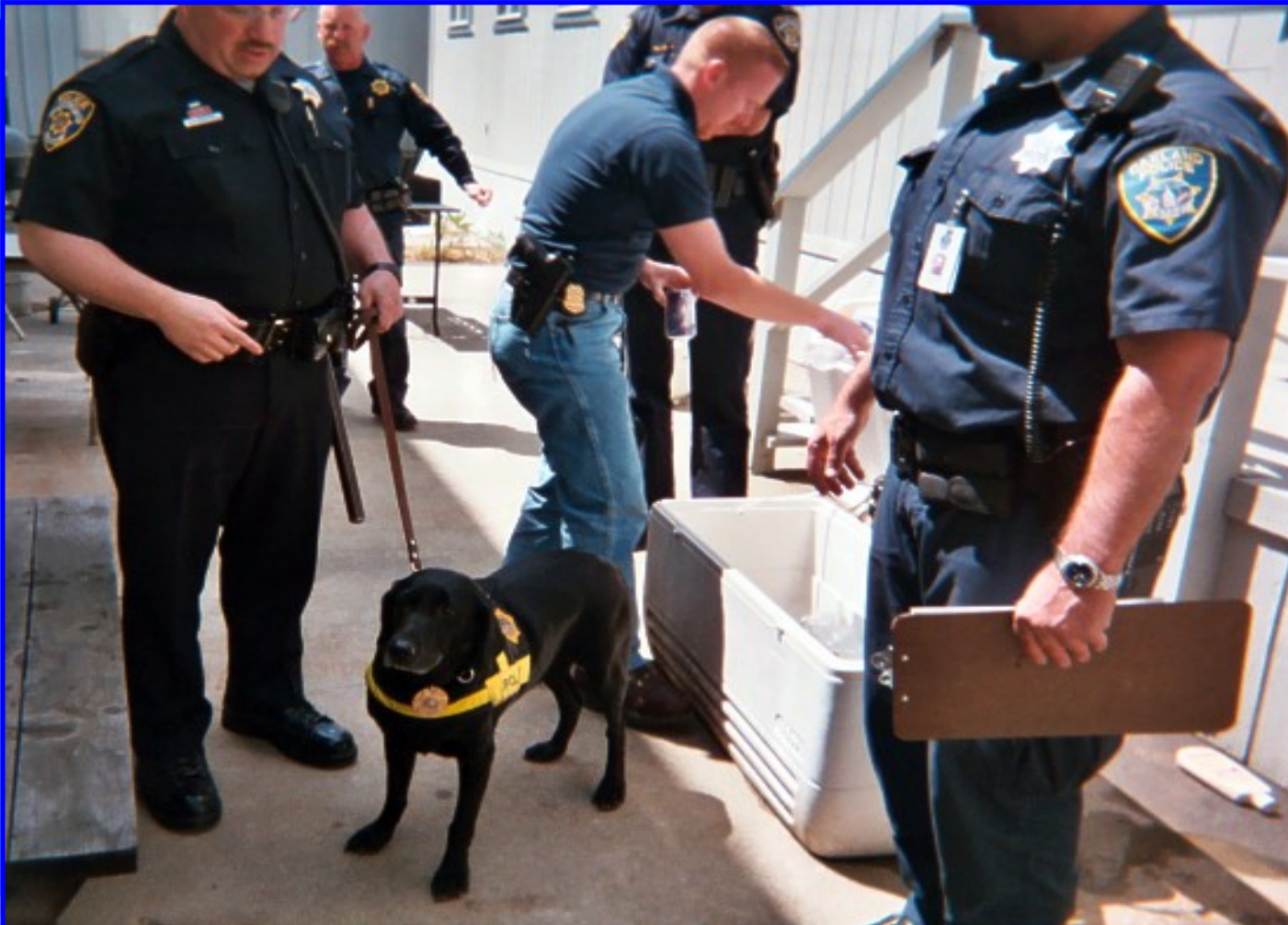
*Through 12/30/06

Multi-Agency Inspections In EJ Communities and Ports



- Tampered/smoking vehicles
- Reflash and certification labels
- Illegal cargo at ports
- Asian import market
- Illegal diesel fuel use
- CHP safety inspections
- Hazardous materials
- Unsecured loads
- Misc. criminal violations routine

Oakland Port Strike Force



LA/LB Port Multi-Agency Strike Force



LA/LB Port Container And Truck Inspections



Recently Implemented and Upcoming Regulations

- Engine Certification (AB 1009) NAFTA regulations – Enforcement started February 2007
- Public & Utility fleet rule (2007 implementation)
- Private diesel vehicle fleet rule (Nov 2007 adoption)
- Port truck rule (Nov 2007 adoption)
- Construction and mining equipment rule (July 2007 adoption)
- Numerous rules regarding port operations (cargo handling equipment 2007 implementation; pending: marine fuels & vessels, others)
- Greenhouse gas regulations (AB 1493 & AB 32)

How to Comply

- Maintain vehicles/equipment per factory specifications and keep accurate and current records
- Maintain communications with ARB staff regarding programs and compliance and sign up for “list serves” on the ARB’s web site
- Complete ARB and CCDET training programs
- Frequently visit the ARB’s web site:

www.arb.ca.gov



Summary

- Diesel vehicles and equipment produce a disproportionate amount of California's Nitrogen Oxides (NOx) and Particulate Matter (PM 2.5) emissions
- ARB administers numerous programs to reduce emissions from these vehicles and equipment
- Programs are cost-effective and achieve significant emissions reductions
- Programs have become models for national and international programs
- These programs are the foundation of the ARB's Diesel Risk Reduction Plan and reduce green house gases also

ARB Contacts

- **Paul E. Jacobs**
Chief, Mobile Source Enforcement
pjacobs@arb.ca.gov
(916) 322-7061
- **Darryl P. Gaslan**
Manager, Heavy-Duty Diesel Enforcement - Southern California
dgaslan@arb.ca.gov
(626) 450-6155
- **Judy Lewis**
Manager, Heavy-Duty Diesel Enforcement - Northern California
jlewis@arb.ca.gov
(916) 322-1879
- **Manfred Ochsner**
Manager, Heavy-Duty Diesel Enforcement – Border Region
mochsner@arb.ca.gov
(626) 350-6532
- **www.arb.ca.gov/enf/enf.htm**